Missouri Department of Transportation

Bridge Division

Bridge Design Manual

Section 6.2

Revised 04/21/2000

Click Here for Index

Index

6.2.1 General

6.2.2 Column Retrofit
2-1 Steel Clamshell Jacket (Round)
2-2 Steel Clamshell Jacket (Square)

6.2.3 Footing Retrofit
3-1 Footing

6.2.4 Bearing Retrofit
4-1 Type D and E Bearings

6.2.1 General

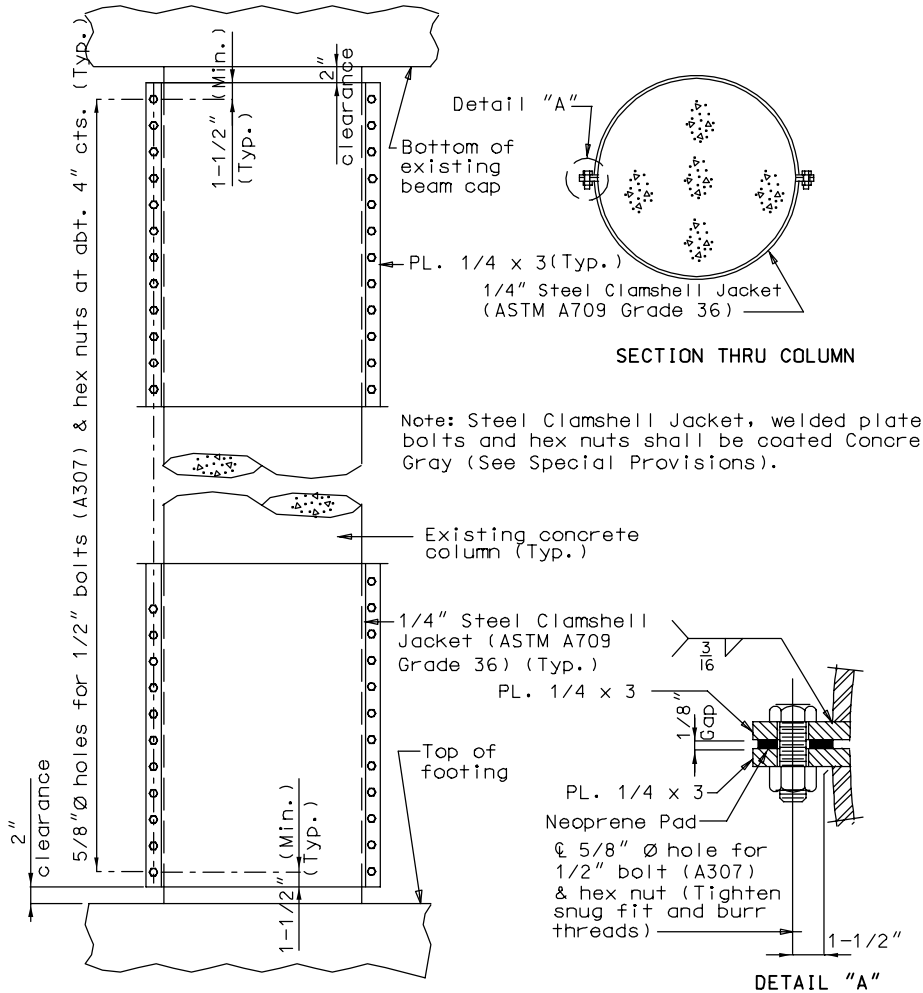
The primary goal of seismic retrofitting is to minimize the risk of unacceptable damage during a design earthquake. Damage is considered unacceptable if it results in the loss of life, the collapse of all or part of the bridge, or the loss of use of a vital transportation route.

Most of the time it is not practical to strengthen existing bridges to the same standards used for new construction. However, the performance of a structure often can be greatly improved, and unacceptable damage can be avoided, through relatively inexpensive and straightforward means. Retrofitting is not intended to completely eliminate structural damage but should be designed to limit damage to easily assessable areas. In this way, bridges can be readily repaired following an earthquake, if necessary, to restore them to their intended use.

The analysis and design procedure shall be based on FHWA Seismic Retrofitting Manual for Highway Bridges, Publication # FHWA-RD-94-052, May 1995.

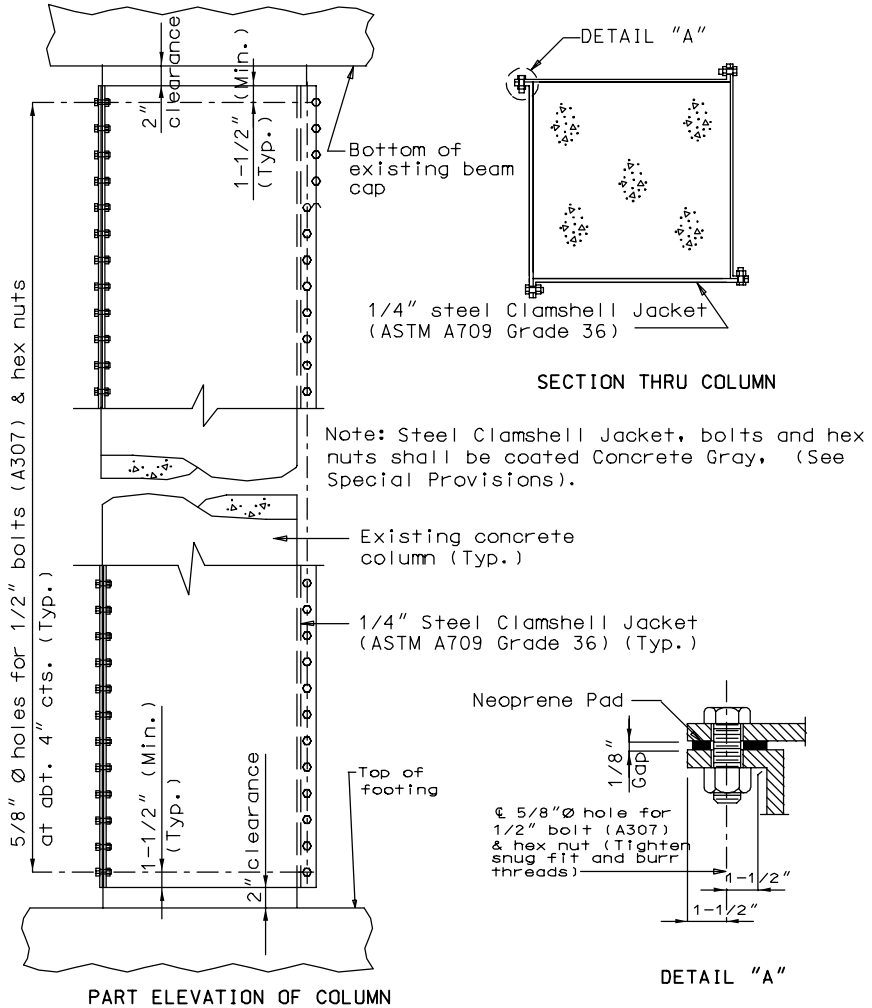
STEEL CLAMSHELL JACKET (ROUND COLUMNS)

Use for Retrofit Columns in Seismic Performance Categories C and D. Extend Clamshell Jackets from the bottom of beam cap to the top of the footing with a space 2" provided between the jacket and footing or beam cap.

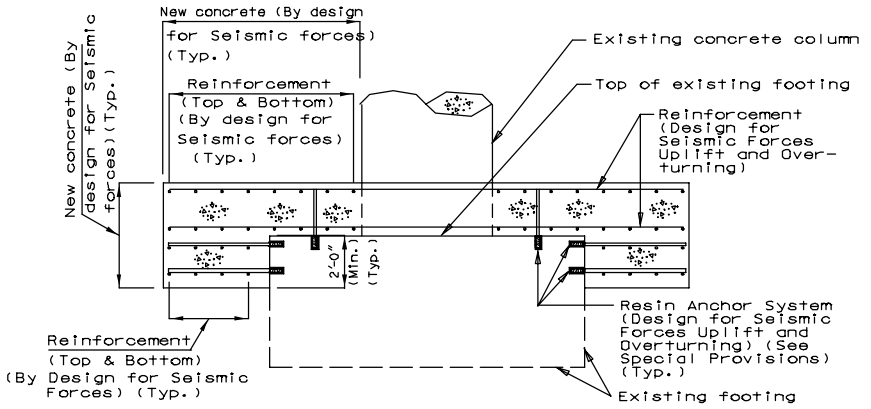


STEEL CLAMSHELL JACKET (SQUARE COLUMNS)

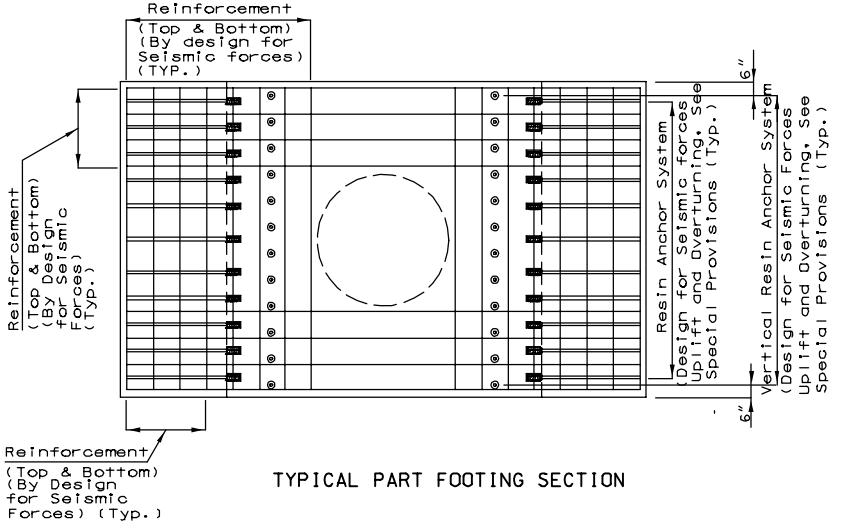
Use for Retrofit Columns in Seismic Performance Categories C and D. Extend Clamshell Jackets from the bottom of beam cap to the top of the footing with a space 2" provided between the jacket and footing or beam cap.



Use for Retrofit Footings in Seismic Performance Categories C and D.



TYPICAL PART FOOTING SECTION

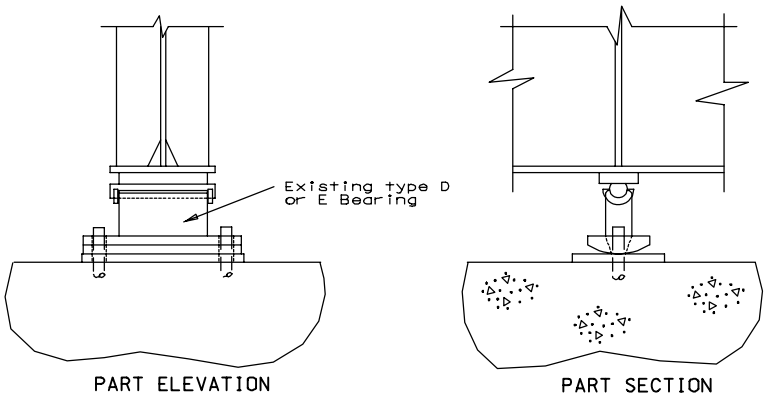


TYPICAL PART FOOTING SECTION

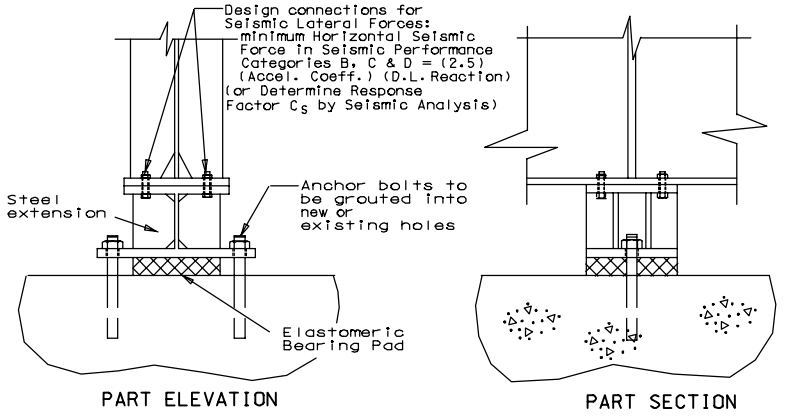
(Round column shown, Details for square column similar)

BEARING RETROFIT FOR TYPE D & E BEARING

Use for the Retrofit of type D & E Bearings in Seismic Performance Categories B, C and D.



EXISTING STEEL BEARING DETAILS



EXTENSION AND BEARING PAD DETAILS

Note: Replace existing D or E Expansion Bearings with built up plate sections and Elastomeric Bearing Pad with slotted anchor plates for expansion.